
Overview of the Mid-America Transportation Center Research Program

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University of Nebraska**

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MATC Research Overview

- U.S.D.O.T. Region VII University Transportation Center
- 51 Current Research Projects
- 63 Graduate RA's

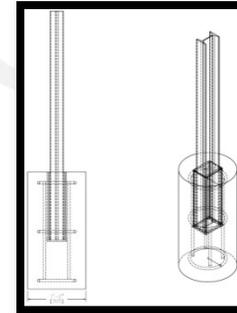


Improving safety and minimizing risk associated with increasing multi-modal freight movements.

Design of High-Tension Cable Guardrail Line Post Bases

PI: Dr. Ron Faller

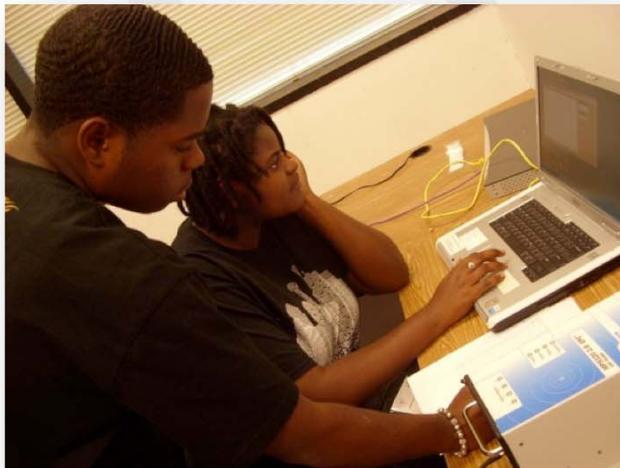
Student: Mr. Lou Zhang





Investigating RFID for Roadside Identification Involving Freight Commercial Vehicle Operators

PI's: Dr. Erick Jones – UNL &
Dr. Judy Perkins – PVAMU
Students: Ms. Nadine Ford &
Mr. Quinton Rogers



Ku Research Spotlight

A Preliminary Appraisal of the Safety and Operational Effects on the Regional Transportation System Created by New Rail-Truck Intermodal Facilities

PI: Dr. Thomas Mulinazzi

Student: Mr. Robert Rescot

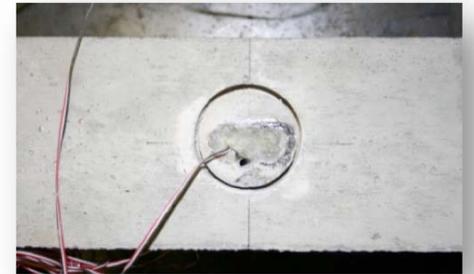


KSU Research Spotlight

Assessing the Damage Potential in Pretensioned Bridges Caused by Increased Truck Loads Due to Freight Movements

PI: Dr. Robert Peterman

Student: Mr. Jake Perkins



University of Iowa Research Spotlight
Improving Freight Fire Safety:
Assessment of the Effectiveness of
Mist-controlling Additives in Mitigating
Crash-Induced Diesel Fires
PI: Dr. Albert Ratner
Student: Brian Sulak



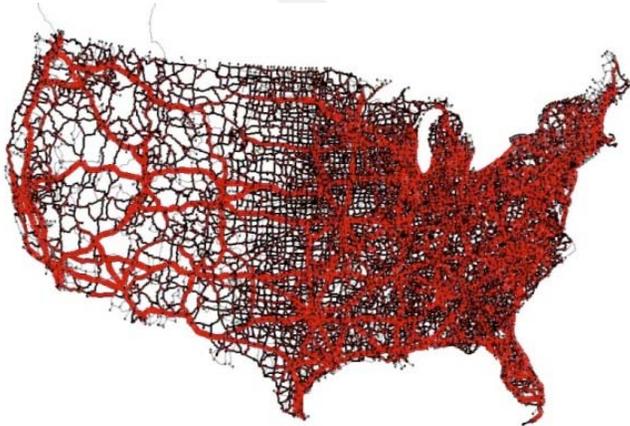


Missouri S&T Research Spotlight

A Framework for Nationwide Multimodal Transportation Demand Analysis

PI: Dr. Hojong Baik

Student: Ms. Yuepeng Cui



Ambitious Program

- Philosophy of Success: Regional Center means regional activities
 - All states are active in MATC activities
 - Equitable sharing of MATC resources
 - Each school participates in MATC senior leadership
 - Individual states/schools unique programs
 - Within constraints of strategic plan

- Philosophy of Success: Regional Center means regional issues
 - Safety
 - Congestion (Freight)
 - Infrastructure / Sustainability
 - Complements Expertise
 - Consortium universities

MATC Advisory Board

- Region VII DOT Research Directors
- Union Pacific
- Ingram Barge Lines
- Trinity Industries
- Werner Transportation
- Association of American Railroads
- American Transportation Research Institute (ATRI)



Partnerships with Other UTC's Inter-region

- MOU's
 - Region V: Purdue University
 - Region VI: Texas Transportation Institute
 - Region VIII: North Dakota State
- Work together
 - Avoid duplication of effort
 - Increase efficiency / effectiveness

Partnerships with Other UTC's Intra-region

- Kansas State University,
- Iowa State University,
- Missouri University of Science and Technology
- All UTC's have at least one faculty member from their consortium on MATC leadership committee



MID-AMERICA
TRANSPORTATION CENTER

Thank you!

**For more information on all our
projects visit:**

www.matc.unl.edu

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UNIVERSITY OF
Nebraska
Lincoln

THE UNIVERSITY OF
KU KANSAS

MISSOURI
S&T
University of
Science & Technology

KSTATE
Kansas State University

THE
UNIVERSITY
OF IOWA

UNIVERSITY OF
LINCOLN
University



UNL- MATC Projects Listing

Effect of Freeway Level of Service and Driver Education on Truck Driver's Stress - Phase 1	Dr. Anuj Sharma
Heavy Vehicle Adjustment Factors for High Percentages of Trucks	Dr. Elizabeth Jones
Impact of Truck Loading on Design and Analysis of Asphaltic Pavement Structures - Phase II	Dr. Yong-Rak Kim
Reducing Impact of Heavy Truck Traffics on Service Life of Bridge Structures	Dr. Atorod Azizinamini
Simulation and Evaluation of a Cable-to-Post Attachment for High-Tension, Cable Barriers Placed in Medians along Freight Transportation Systems	Dr. Robert Bielenberg
Investigating RFID for Linear Asset Management	Dr. Erick Jones
Assessing the Risk of Crash for Trucks on Onset Yellow	Dr. Anuj Sharma
Computational Design Tool for Bridge Hydrodynamic Loading in Inundated Flows of Midwest Rivers	Dr. Junke Guo
Design of High Tension Cable Post Bases	Dr. John Rohde
Material Model Development for Wire Rope used in Safety Cable Barriers to Contain Passenger and Commercial Vehicles	Dr. John Reid
Risk Mitigation for Highway and Railway Bridges	Dr. Andrzej Nowak

UNL Projects - Continued

Assessment of Truck Safety at Railroad Crossings	Dr. Aemal Khattak
Study of RF Propagation Characteristics for Wireless Sensor Networks in Railroad Environments	Dr. Hamid Sharif
Development of Prototype On-Line Courses	Dr. Elizabeth Jones
Safety Investigation and Guidance for Work-Zone Devices in Freight Transportation Systems Subjected to Passenger Car and Truck Impacts with New Crash Standards	Dr. Ronald Faller
Foundation Design for High Tension Cable Guardrails	Dr. John Rhode
Impact of Trucks on Signalized Intersections	Dr. Elizabeth Jones
Investigation of Factors Associated with Truck Crashes Related to Skid Resistance in Region VII	Dr. Aemal Khattak
Investigating RFID for Roadside Identification Involving Freight Commercial Vehicle Operators (CVO)	Dr. Erick Jones (UNL) Dr. Judy Perkins (PVA&M)
Impact of Truck Loading on Design and Analysis of Asphaltic Pavement Structures (Joint Research)	Dr. Yong-Rak Kim (UNL) Dr. Yu-Ning Ge (MS&T)

Missouri University of Science & Technology -MATC Projects Listing

Crash Analysis in MoDOT I-64 Project	Dr. Hojong Baik
I270/I-255 Variable Speed Limit Study	Dr. Ghulam Bham
Initial Study and Verification of a Distributed Fiber Optic Corrosion Monitoring System for Transportation Structures	Dr. Hai Xiao
Pilot Study on Rugged Fiber Optic Brillouin Sensors for Large Strain Measurements to Ensure the Safety of Transportation Structures	Dr. Genda Chen
Impact of Trucks in the Development of Work Zone Capacity Guidelines	Dr. Ghulam Bham
Safer Work Zones for Heavy and Light Weight Vehicles: Speed Limit Up or Speed Limit Down	Dr. Ghulam Bham
Improving Work Zone Safety for Freight Vehicles: Effective Design Patterns for Vehicle-Mounted Attenuators	Dr. Ghulam Bham
A Framework for the Nationwide Multimodal Transportation Demand Analysis	Dr. Hojong Baik



University of Iowa – MATC

Projects Listing

Automated Erosion System to Protect Highway Bridge Crossings at Abutments	Dr. Thanos Papanicolaou
Improving Freight Fire Safety: Experimental Testing and Computer Modeling to Further Development of Mist-controlling Additives for Fire Mitigation	Dr. Albert Ratner
Performance Measures of Warm Asphalt Mistures for Safe and Reliable Freight Transportation (Phase 2: Evaluation of Friction and Raveling Characteristics of Warm Mix Asphalt Mixtures with Anti-stripping Agents)	Dr. Hosin Lee
Improving Freight Fire Safety: Analysis and Testing of Real Engine Conditions to Progress Development of Mist-controlling Additives for Fire Mitigation	Dr. Albert Ratner
Improving Freight Fire Safety: Assessment of the Effectiveness of Mist-controlling Additives in Mitigating Crash-induced Diesel Fires	Dr. Albert Ratner
Performance Measures of Warm Asphalt Mixtures for Safe and Reliable Freight Transportation	Dr. Hossin "David" Lee
Safety Climate of Commercial Vehicle Operation	Dr. Linda Boyle



KSU – Projects Listing

Characteristics and Contributory Causes Related to Large Truck Crashes-Phase II	Dr. Sunanda Dissanayake
Determining the Stresses in Steel Railroad-Track Rails Due to Freight Movements using Non-Contact Laser-Speckle	Dr. Robert Peterman
Improving Safety of the Surface Transportation System by Addressing the Issues of Vulnerable Road Users: Case of the Motorcyclists	Dr. Sunanda Dissanayake
Assessing the Damage Potential in Pretensioned Bridges Caused by Increased Truck Loads Due to Freight Movements (Phase 2)	Dr. Robert Peterman
Extending Asphalt Pavement Life Using Thin Whitetopping	Dr. Mustaque Hossain
Assessing the Damage Potential in Pretensioned Bridges Caused by Increased Truck Loads Due to Freight Movements (Phase 1)	Dr. Robert Peterman
Characteristics and Contributory Causes Related to Large Truck Crashes (Phase I)	Dr. Sunanda Dissanayake
Extending Pavement Life Using Thin Surfacing to Counter the Effect of Increased Truck Traffic Due to Freight Movements on Highways	Dr. Mustaque Hossain

KU MATC Projects Listing

Enhanced Sustainability of Railroad Ballast	Dr. Robert Parsons
Improving the Long-Range Tracking Algorithm for use in Tracking Long-Haul Trucks using Cellular Data	Dr. Steven Schrock
Modeling Truck Speed in the Upstream of Two-lane Highway Work Zones: Implications on Reducing Truck-Related Crashes in Work Zones	Dr. Yong Bai
Closed Course Testing of Portable Rumble Strips to Improve Truck Safety at Work Zones	Dr. Steven Schrock
Estimating Highway Pavement Damage Costs Attributed to Truck Traffic	Dr. Yong Bai
Mitigating Wind-Induced Truck Crashes	Dr. Thomas Mulinazzi
A Preliminary Appraisal of the Safety and Operational Effects on the Regional Transportation System Created by New Rail-Truck Intermodal Facilities	Dr. Thomas Mulinazzi
Feasibility of Using Cellular Telephone Data to Determine the Truckshed of Rail-Truck Intermodal Facilities	Dr. Steve Schrock